

SEQUENCE LISTING

<110> KAPELLER-LIBERMANN, Rosana

<120> 13245, A Novel Human Myotonic Dystrophy Type Protein
Kinase and Uses Therefor

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<140> Not Yet Assigned

<141> 2001-10-23

<150> US 60/242,429

<151> 2000-10-23

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<170> PatentIn Ver. 2.1

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35 40 45

Glu Gly Met Leu Asp Ala Leu Phe Ala Leu Phe Glu Glu Cys Ser Gln
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Pro Ala Leu Met Lys Met Lys His Val Ser Ser Phe Val Gln Lys Tyr
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Ser Asp Thr Ile Ala Glu Leu Arg Glu Leu Gln Pro Ser Ala Arg Asp
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Phe Glu Val Arg Ser Leu Val Gly Cys Gly His Phe Ala Glu Val Gln
100 105 110

Val Val Arg Glu Lys Ala Thr Gly Asp Val Tyr Ala Met Lys Ile Met
115 120 125

Ser Asn Phe Asp Glu Pro Glu Lys Asn Ser Trp Ala Phe Ile Leu Cys
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 Val Pro Ala Glu Pro Leu Ala Phe Ser Gly Glu Glu Leu Pro Phe Val
 405 410 415
 Gly Phe Ser Tyr Ser Lys Ala Leu Gly Tyr Leu Gly Arg Ser Glu Ser
 420 425 430
 Val Val Ser Ser Leu Asp Ser Pro Ala Lys Val Ser Ser Met Glu Lys
 435 440 445
 Lys Leu Leu Ile Lys Ser Lys Glu Leu Gln Asp Ser Gln Asp Lys Cys
 450 455 460
 His Lys Met Glu Gln Glu Met Thr Arg Leu His Arg Arg Val Ser Glu
 465 470 475 480
 Val Glu Ala Val Leu Ser Gln Lys Glu Val Glu Leu Lys Ala Ser Glu
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 Thr Gln Arg Ser Leu Leu Glu Gln Asp Leu Ala Thr Tyr Ile Thr Glu
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 Cys Ser Ser Leu Lys Arg Ser Leu Glu Gln Ala Arg Met Glu Val Ser
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 Gln Glu Asp Asp Lys Ala Leu Gln Leu Leu His Asp Ile Arg Glu Gln
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 Ser Arg Lys Leu Gln Glu Ile Lys Glu Gln Glu Tyr Gln Ala Gln Val
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 Glu Glu Met Arg Leu Met Met Asn Gln Leu Glu Glu Asp Leu Val Ser
 565 570 575
 Ala Arg Arg Arg Ser Asp Leu Tyr Glu Ser Glu Leu Arg Glu Ser Arg
 580 585 590
 Leu Ala Ala Glu Glu Phe Lys Arg Lys Ala Asn Glu Cys Gln His Lys
 595 600 605
 Leu Met Lys Ala Lys Asp Gln Gly Lys Pro Glu Val Gly Glu Tyr Ser
 610 615 620
 Lys Leu Glu Lys Ile Asn Ala Glu Gln Gln Leu Lys Ile Gln Glu Leu
 625 630 635 640

Thr Arg Leu Arg Glu Val Ser Leu Glu His Glu Glu Gln Lys Leu Glu
 900 905 910

Leu Lys Arg Gln Leu Thr Glu Leu Gln Leu Ser Leu Gln Glu Arg Glu
 915 920 925

Ser Gln Leu Thr Ala Leu Gln Ala Ala Arg Ala Ala Leu Glu Ser Gln
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Leu Arg Gln Ala Lys Thr Glu Leu Glu Glu Thr Thr Ala Glu Ala Glu
 945 950 955 960

Glu Glu Ile Gln Ala Leu Thr Ala His Arg Asp Glu Ile Gln Arg Lys
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Phe Asp Ala Leu Arg Asn Ser Cys Thr Val Ile Thr Asp Leu Glu Glu
 980 985 990

Gln Leu Asn Gln Leu Thr Glu Asp Asn Ala Glu Leu Asn Asn Gln Asn
 995 1000 1005

Phe Tyr Leu Ser Lys Gln Leu Asp Glu Ala Ser Gly Ala Asn Asp Glu
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Ile Val Gln Leu Arg Ser Glu Val Asp His Leu Arg Arg Glu Ile Thr
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Glu Arg Glu Met Gln Leu Thr Ser Gln Lys Gln Thr Met Glu Ala Leu
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Lys Thr Thr Cys Thr Met Leu Glu Glu Gln Val Leu Asp Leu Glu Ala
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Leu Asn Asp Glu Leu Leu Glu Lys Glu Arg Gln Trp Glu Ala Trp Arg
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Ser Val Leu Gly Asp Glu Lys Ser Gln Phe Glu Cys Arg Val Arg Glu
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Leu Gln Arg Met Leu Asp Thr Glu Lys Gln Ser Arg Ala Arg Ala Asp
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Gln Arg Ile Thr Glu Ser Arg Gln Val Val Glu Leu Ala Val Lys Glu
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His Lys Ala Glu Ile Leu Ala Leu Gln Gln Ala Leu Lys Glu Gln Lys
 1140 1145 1150

Val His Phe Gly Arg Gln Ala Ser Lys Cys Leu Glu Cys Gln Val Met
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Cys His Pro Lys Cys Ser Thr Cys Leu Pro Ala Thr Cys Gly Leu Pro
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Ala Glu Tyr Ala Thr His Phe Thr Glu Ala Phe Cys Arg Asp Lys Met
 1445 1450 1455

Asn Ser Pro Gly Leu Gln Ser Lys Glu Pro Gly Ser Ser Leu His Leu
 1460 1465 1470

Glu Gly Trp Met Lys Val Pro Arg Asn Asn Lys Arg Gly Gln Gln Gly
 1475 1480 1485

Trp Asp Arg Lys Tyr Ile Val Leu Glu Gly Ser Lys Val Leu Ile Tyr
 1490 1495 1500

Asp Asn Glu Ala Arg Glu Ala Gly Gln Arg Pro Val Glu Glu Phe Glu
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Leu Cys Leu Pro Asp Gly Asp Val Ser Ile His Gly Ala Val Gly Ala
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Ser Glu Leu Ala Asn Thr Ala Lys Ala Asp Val Pro Tyr Ile Leu Lys
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Met Glu Ser His Pro His Thr Thr Cys Trp Pro Gly Arg Thr Leu Tyr
 1555 1560 1565

Leu Leu Ala Pro Ser Phe Pro Asp Lys Gln Arg Trp Val Thr Ala Leu
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Glu Ser Val Val Ala Gly Gly Arg Val Ser Arg Glu Lys Ala Glu Ala
 1585 1590 1595 1600

Asp Ala Lys Leu Leu Gly Asn Ser Leu Leu Lys Leu Glu Gly Asp Asp
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Arg Leu Asp Met Asn Cys Thr Leu Pro Phe Ser Asp Gln Val Val Leu
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Val Gly Thr Glu Glu Gly Leu Tyr Ala Leu Asn Val Leu Lys Asn Ser
 1635 1640 1645

Leu Thr His Ile Pro Gly Ile Gly Ala Val Phe Gln Ile Tyr Ile Ile
 1650 1655 1660

Lys Asp Leu Glu Lys Leu Leu Met Ile Ala Gly Glu Glu Arg Ala Leu
 1665 1670 1675 1680

Cys Leu Val Asp Val Lys Lys Val Lys Gln Ser Leu Ala Gln Ser His
 1685 1690 1695

Leu Pro Ala Gln Pro Asp Val Ser Pro Asn Ile Phe Glu Ala Val Lys
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Gly Cys His Leu Phe Ala Ala Gly Lys Ile Glu Asn Ser Leu Cys Ile
 1715 1720 1725

Cys Ala Ala Met Pro Ser Lys Val Val Ile Leu Arg Tyr Asn Asp Asn
 1730 1735 1740

Leu Ser Lys Tyr Cys Ile Arg Lys Glu Ile Glu Thr Ser Glu Pro Cys
 1745 1750 1755 1760

Ser Cys Ile His Phe Thr Asn Tyr Ser Ile Leu Ile Gly Thr Asn Lys
 1765 1770 1775

Phe Tyr Glu Ile Asp Met Lys Gln Tyr Thr Leu Asp Glu Phe Leu Asp
 1780 1785 1790

Lys Asn Asp His Ser Leu Ala Pro Ala Val Phe Ala Ser Ser Ser Asn
 1795 1800 1805

Ser Phe Pro Val Ser Ile Val Gln Ala Asn Ser Ala Gly Gln Arg Glu
 1810 1815 1820

Glu Tyr Leu Leu Cys Phe His Glu Phe Gly Val Phe Val Asp Ser Tyr
 1825 1830 1835 1840

Gly Arg Arg Ser Arg Thr Asp Asp Leu Lys Trp Ser Arg Leu Pro Leu
 1845 1850 1855

Ala Phe Ala Tyr Arg Glu Pro Tyr Leu Phe Val Thr His Phe Asn Ser
 1860 1865 1870

Leu Glu Val Ile Glu Ile Gln Ala Arg Ser Ser Leu Gly Ser Pro Ala
 1875 1880 1885

Arg Ala Tyr Leu Glu Ile Pro Asn Pro Arg Tyr Leu Gly Pro Ala Ile
 1890 1895 1900

Ser Ser Gly Ala Ile Tyr Leu Ala Ser Ser Tyr Gln Asp Lys Leu Arg
 1905 1910 1915 1920

Val Ile Cys Cys Lys Gly Asn Leu Val Lys Glu Ser Gly Thr Glu Gln
 1925 1930 1935

His Arg Val Pro Ser Thr Ser Arg Ser Ser Pro Asn Lys Arg Gly Pro
 1940 1945 1950

Pro Thr Tyr Asn Glu His Ile Thr Lys Arg Val Ala Ser Ser Pro Ala
 1955 1960 1965

Pro Pro Glu Gly Pro Ser His Pro Arg Glu Pro Ser Thr Pro His Arg
 1970 1975 1980

Tyr Arg Asp Arg Glu Gly Arg Thr Glu Leu Arg Arg Asp Lys Ser Pro
 1985 1990 1995 2000

Gly Arg Pro Leu Glu Arg Glu Lys Ser Pro Gly Arg Met Leu Ser Thr
 2005 2010 2015

Arg Arg Glu Arg Ser Pro Gly Arg Leu Phe Glu Asp Ser Ser Arg Gly
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Arg Leu Pro Ala Gly Ala Val Arg Thr Pro Leu Ser Gln Val Asn Lys
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Val Trp Asp Gln Ser Ser Val
 2050 2055

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<212> PRT

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<400> 5

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Glu Pro Glu Lys Asn Ser Trp Val Ser Ser Ser Val Cys Gln Leu Ser
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Pro Ser Gly Phe Ser Gly Glu Glu Leu Pro Phe Val Gly Phe Ser Tyr
 35 40 45

Ser Lys Ala Leu Gly Tyr Leu Gly Arg Ser Glu Ser Val Val Ser Ser
 50 55 60

Leu Asp Ser Pro Ala Lys Val Ser Ser Met Glu Lys Lys Leu Leu Ile
 65 70 75 80

Leu Glu Val His Leu Lys Gln Lys Glu Gln His Tyr Glu Glu Lys Ile	340	345	350
Lys Val Leu Asp Asn Gln Ile Lys Lys Asp Leu Ala Asp Lys Glu Ser	355	360	365
Leu Glu Asn Met Met Gln Arg His Glu Glu Glu Ala His Glu Lys Gly	370	375	380
Lys Ile Leu Ser Glu Gln Lys Ala Met Ile Asn Ala Met Asp Ser Lys	385	390	395
Ile Arg Ser Leu Glu Gln Arg Ile Val Glu Leu Ser Glu Ala Asn Lys	405	410	415
Leu Ala Ala Asn Ser Ser Leu Phe Thr Gln Arg Asn Met Lys Ala Gln	420	425	430
Glu Glu Met Ile Ser Glu Leu Arg Gln Gln Lys Phe Tyr Leu Glu Thr	435	440	445
Gln Ala Gly Lys Leu Glu Ala Gln Asn Arg Lys Leu Glu Glu Gln Leu	450	455	460
Glu Lys Ile Ser His Gln Asp His Ser Asp Lys Ser Arg Leu Leu Glu	465	470	475
Leu Glu Thr Arg Leu Arg Glu Val Ser Leu Glu His Glu Glu Gln Lys	485	490	495
Leu Glu Leu Lys Arg Gln Leu Thr Glu Leu Gln Leu Ser Leu Gln Glu	500	505	510
Arg Glu Ser Gln Leu Thr Ala Leu Gln Ala Ala Arg Ala Ala Leu Glu	515	520	525
Ser Gln Leu Arg Gln Ala Lys Thr Glu Leu Glu Glu Thr Thr Ala Glu	530	535	540
Ala Glu Glu Glu Ile Gln Ala Leu Thr Ala His Arg Asp Glu Ile Gln	545	550	555
Arg Lys Phe Asp Ala Leu Arg Asn Ser Cys Thr Val Ile Thr Asp Leu	565	570	575
Glu Glu Gln Leu Asn Gln Leu Thr Glu Asp Asn Ala Glu Leu Asn Asn	580	585	590

Gln Asn Phe Tyr Leu Ser Lys Gln Leu Asp Glu Ala Ser Gly Ala Asn
595 600 605

Asp Glu Ile Val Gln Leu Arg Ser Glu Val Asp His Leu Arg Arg Glu
610 615 620

Ile Thr Glu Arg Glu Met Gln Leu Thr Ser Gln Lys Gln Thr Met Glu
625 630 635 640

Ala Leu Lys Thr Thr Cys Thr Met Leu Glu Glu Gln Val Leu Asp Leu
645 650 655

Glu Ala Leu Asn Asp Glu Leu Leu Glu Lys Glu Arg Gln Trp Glu Ala
660 665 670

Trp Arg Ser Val Leu Gly Asp Glu Lys Ser Gln Phe Glu Cys Arg Val
675 680 685

Arg Glu Leu Gln Arg Met Leu Asp Thr Glu Lys Gln Ser Arg Ala Arg
690 695 700

Ala Asp Gln Arg Ile Thr Glu Ser Arg Gln Val Val Glu Leu Ala Val
705 710 715 720

Lys Glu His Lys Ala Glu Ile Leu Ala Leu Gln Gln Ala Leu Lys Glu
725 730 735

Gln Lys Leu Lys Ala Glu Ser Leu Ser Asp Lys Leu Asn Asp Leu Glu
740 745 750

Lys Lys His Ala Met Leu Glu Met Asn Ala Arg Ser Leu Gln Gln Lys
755 760 765

Leu Glu Thr Glu Arg Glu Leu Lys Gln Arg Leu Leu Glu Glu Gln Ala
770 775 780

Lys Leu Gln Gln Gln Met Asp Leu Gln Lys Asn His Ile Phe Arg Leu
785 790 795 800

Thr Gln Gly Leu Gln Glu Ala Leu Asp Arg Ala Asp Leu Leu Lys Thr
805 810 815

Glu Arg Ser Asp Leu Glu Tyr Gln Leu Glu Asn Ile Gln Val Leu Tyr
820 825 830

Ser His Glu Lys Val Lys Met Glu Gly Thr Ile Ser Gln Gln Thr Lys
835 840 845

Phe Glu Leu Cys Leu Pro Asp Gly Asp Val Ser Ile His Gly Ala Val
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Gly Ala Ser Glu Leu Ala Asn Thr Ala Lys Ala Asp Val Pro Tyr Ile
 1125 1130 1135

Leu Lys Met Glu Ser His Pro His Thr Thr Cys Trp Pro Gly Arg Thr
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Leu Tyr Leu Leu Ala Pro Ser Phe Pro Asp Lys Gln Arg Trp Val Thr
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Ala Leu Glu Ser Val Val Ala Gly Gly Arg Val Ser Arg Glu Lys Ala
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Asp Asp Arg Leu Asp Met Asn Cys Thr Leu Pro Phe Ser Asp Gln Val
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Val Leu Val Gly Thr Glu Glu Gly Leu Tyr Ala Leu Asn Val Leu Lys
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Asn Ser Leu Thr His Ile Pro Gly Ile Gly Ala Val Phe Gln Ile Tyr
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Ile Ile Lys Asp Leu Glu Lys Leu Leu Met Ile Ala Gly Glu Glu Arg
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Ala Leu Cys Leu Val Asp Val Lys Lys Val Lys Gln Ser Leu Ala Gln
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Ser His Leu Pro Ala Gln Pro Asp Val Ser Pro Asn Ile Phe Glu Ala
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Val Lys Gly Cys His Leu Phe Ala Ala Gly Lys Ile Glu Asn Ser Leu
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Cys Ile Cys Ala Ala Met Pro Ser Lys Val Val Ile Leu Arg Tyr Asn
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Asp Asn Leu Ser Lys Tyr Cys Ile Arg Lys Glu Ile Glu Thr Ser Glu
 1330 1335 1340

Pro Cys Ser Cys Ile His Phe Thr Asn Tyr Ser Ile Leu Ile Gly Thr
 1345 1350 1355 1360

Asn Lys Phe Tyr Glu Ile Asp Met Lys Gln Tyr Thr Leu Asp Glu Phe
1365 1370 1375

Leu Asp Lys Asn Asp His Ser Leu Ala Pro Ala Val Phe Ala Ser Ser
1380 1385 1390

Ser Asn Ser Phe Pro Val Ser Ile Val Gln Ala Asn Ser Ala Gly Gln
1395 1400 1405

Arg Glu Glu Tyr Leu Leu Cys Phe His Glu Phe Gly Val Phe Val Asp
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Ser Tyr Gly Arg Arg Ser Arg Thr Asp Asp Leu Lys Trp Ser Arg Leu
1425 1430 1435 1440

Pro Leu Ala Phe Ala Tyr Arg Glu Pro Tyr Leu Phe Val Thr His Phe
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Asn Ser Leu Glu Val Ile Glu Ile Gln Ala Arg Ser Ser Leu Gly Ser
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Pro Ala Arg Ala Tyr Leu Glu Ile Pro Asn Pro Arg Tyr Leu Gly Pro
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Ala Ile Ser Ser Gly Ala Ile Tyr Leu Ala Ser Ser Tyr Gln Asp Lys
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Leu Arg Val Ile Cys Cys Lys Gly Asn Leu Val Lys Glu Ser Gly Thr
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Glu Gln His Arg Val Pro Ser Thr Ser Arg Ser Ser Pro Asn Lys Arg
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Gly Pro Pro Thr Tyr Asn Glu His Ile Thr Lys Arg Val Ala Ser Ser
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Pro Ala Pro Pro Glu Gly Pro Ser His Pro Arg Glu Pro Ser Thr Pro
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His Arg Tyr Arg Asp Arg Glu Gly Arg Thr Glu Leu Arg Arg Asp Lys
1570 1575 1580

Ser Pro Gly Arg Pro Leu Glu Arg Glu Lys Ser Pro Gly Arg Met Leu
1585 1590 1595 1600

Ser Thr Arg Arg Glu Arg Ser Pro Gly Arg Leu Phe Glu Asp Ser Ser
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Arg Gly Arg Leu Pro Ala Gly Ala Val Arg Thr Pro Leu Ser Gln Val
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Asn Lys Val Trp Asp Gln Ser Ser Val
 1635 1640

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Glu Leu Lys Ala Ser Glu Thr Gln Arg Ser Leu Leu Glu Gln Asp Leu
 35 40 45

Ala Thr Tyr Ile Thr Glu Cys Ser Ser Leu Lys Arg Ser Leu Glu Gln
 50 55 60

Ala Arg Met Glu Val Ser Gln Glu Asp Asp Lys Ala Leu Gln Leu Leu
 65 70 75 80

His Asp Ile Arg Glu Gln Ser Arg Lys Leu Gln Glu Ile Lys Glu Gln
 85 90 95

Glu Tyr Gln Ala Gln Val Glu Glu Met Arg Leu Met Met Asn Gln Leu
 100 105 110

Glu Glu Asp Leu Val Ser Ala Arg Arg Arg Ser Asp Leu Tyr Glu Ser
 115 120 125

Glu Leu Arg Glu Ser Arg Leu Ala Ala Glu Glu Phe Lys Arg Lys Ala
 130 135 140

Asn Glu Cys Gln His Lys Leu Met Lys Ala Lys Asp Gln Gly Lys Pro
 145 150 155 160

Glu Val Gly Glu Tyr Ser Lys Leu Glu Lys Ile Asn Ala Glu Gln Gln
 165 170 175

Leu Lys Ile Gln Glu Leu Gln Glu Lys Leu Glu Lys Ala Val Lys Ala

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450	455	460
Ser Leu Gln Glu Arg Glu Ser Gln Leu Thr Ala Leu Gln Ala Ala Arg		
465	470	475 480
Ala Ala Leu Glu Ser Gln Leu Arg Gln Ala Lys Thr Glu Leu Glu Glu		
485	490	495
Thr Thr Ala Glu Ala Glu Glu Glu Ile Gln Ala Leu Thr Ala His Arg		
500	505	510
Asp Glu Ile Gln Arg Lys Phe Asp Ala Leu Arg Asn Ser Cys Thr Val		
515	520	525
Ile Thr Asp Leu Glu Glu Gln Leu Asn Gln Leu Thr Glu Asp Asn Ala		
530	535	540
Glu Leu Asn Asn Gln Asn Phe Tyr Leu Ser Lys Gln Leu Asp Glu Ala		
545	550	555 560
Ser Gly Ala Asn Asp Glu Ile Val Gln Leu Arg Ser Glu Val Asp His		
565	570	575
Leu Arg Arg Glu Ile Thr Glu Arg Glu Met Gln Leu Thr Ser Gln Lys		
580	585	590
Gln Thr Met Glu Ala Leu Lys Thr Thr Cys Thr Met Leu Glu Glu Gln		
595	600	605
Val Leu Asp Leu Glu Ala Leu Asn Asp Glu Leu Leu Glu Lys Glu Arg		
610	615	620
Gln Trp Glu Ala Trp Arg Ser Val Leu Gly Asp Glu Lys Ser Gln Phe		
625	630	635 640
Glu Cys Arg Val Arg Glu Leu Gln Arg Met Leu Asp Thr Glu Lys Gln		
645	650	655
Ser Arg Ala Arg Ala Asp Gln Arg Ile Thr Glu Ser Arg Gln Val Val		
660	665	670
Glu Leu Ala Val Lys Glu His Lys Ala Glu Ile Leu Ala Leu Gln Gln		
675	680	685
Ala Leu Lys Glu Gln Lys Leu Lys Ala Glu Ser Leu Ser Asp Lys Leu		

690

695

700

Asn Asp Leu Glu Lys Lys His Ala Met Leu Glu Met Asn Ala Arg Ser
705 710 715 720

Leu Gln Gln Lys Leu Glu Thr Glu Arg Glu Leu Lys Gln Arg Leu Leu
725 730 735

Glu Glu Gln Ala Lys Leu Gln Gln Gln Met Asp Leu Gln Lys Asn His
740 745 750

Ile Phe Arg Leu Thr Gln Gly Leu Gln Glu Ala Leu Asp Arg Ala Asp
755 760 765

Leu Leu Lys Thr Glu Arg Ser Asp Leu Glu Tyr Gln Leu Glu Asn Ile
770 775 780

Gln Val Leu Tyr Ser His Glu Lys Val Lys Met Glu Gly Thr Ile Ser
785 790 795 800

Gln Gln Thr Lys Leu Ile Asp Phe Leu Gln Ala Lys Met Asp Gln Pro
805 810 815

Ala Lys Lys Lys Lys Val Pro Leu Gln Tyr Asn Glu Leu Lys Leu Ala
820 825 830

Leu Glu Lys Glu Lys Ala Arg Cys Ala Glu Leu Glu Glu Ala Leu Gln
835 840 845

Lys Thr Arg Ile Glu Leu Arg Ser Ala Arg Glu Glu Ala Ala His Arg
850 855 860

Lys Ala Thr Asp His Pro His Pro Ser Thr Pro Ala Thr Ala Arg Gln
865 870 875 880

Gln Ile Ala Met Ser Ala Ile Val Arg Ser Pro Glu His Gln Pro Ser
885 890 895

Ala Met Ser Leu Leu Ala Pro Pro Ser Ser Arg Arg Lys Glu Ser Ser
900 905 910

Thr Pro Glu Glu Phe Ser Arg Arg Leu Lys Glu Arg Met His His Asn
915 920 925

Ile Pro His Arg Phe Asn Val Gly Leu Asn Met Arg Ala Thr Lys Cys
930 935 940

Ala Val Cys Leu Asp Thr Val His Phe Gly Arg Gln Ala Ser Lys Cys

945	950	955	960
Leu Glu Cys Gln Val Met Cys His Pro Lys Cys Ser Thr Cys Leu Pro			
965	970	975	
Ala Thr Cys Gly Leu Pro Ala Glu Tyr Ala Thr His Phe Thr Glu Ala			
980	985	990	
Phe Cys Arg Asp Lys Met Asn Ser Pro Gly Leu Gln Ser Lys Glu Pro			
995	1000	1005	
Gly Ser Ser Leu His Leu Glu Gly Trp Met Lys Val Pro Arg Asn Asn			
1010	1015	1020	
Lys Arg Gly Gln Gln Gly Trp Asp Arg Lys Tyr Ile Val Leu Glu Gly			
1025	1030	1035	1040
Ser Lys Val Leu Ile Tyr Asp Asn Glu Ala Arg Glu Ala Gly Gln Arg			
1045	1050	1055	
Pro Val Glu Glu Phe Glu Leu Cys Leu Pro Asp Gly Asp Val Ser Ile			
1060	1065	1070	
His Gly Ala Val Gly Ala Ser Glu Leu Ala Asn Thr Ala Lys Ala Asp			
1075	1080	1085	
Val Pro Tyr Ile Leu Lys Met Glu Ser His Pro His Thr Thr Cys Trp			
1090	1095	1100	
Pro Gly Arg Thr Leu Tyr Leu Leu Ala Pro Ser Phe Pro Asp Lys Gln			
1105	1110	1115	1120
Arg Trp Val Thr Ala Leu Glu Ser Val Val Ala Gly Gly Arg Val Ser			
1125	1130	1135	
Arg Glu Lys Ala Glu Ala Asp Ala Lys Leu Leu Gly Asn Ser Leu Leu			
1140	1145	1150	
Lys Leu Glu Gly Asp Asp Arg Leu Asp Met Asn Cys Thr Leu Pro Phe			
1155	1160	1165	
Ser Asp Gln Val Val Leu Val Gly Thr Glu Glu Gly Leu Tyr Ala Leu			
1170	1175	1180	
Asn Val Leu Lys Asn Ser Leu Thr His Ile Pro Gly Ile Gly Ala Val			
1185	1190	1195	1200
Phe Gln Ile Tyr Ile Ile Lys Asp Leu Glu Lys Leu Leu Met Ile Ala			

Glu Met Ile Ser Glu Leu Arg Gln Gln Lys Phe Tyr Leu Glu Thr Gln	85	90	95
Ala Gly Lys Leu Glu Ala Gln Asn Arg Lys Leu Glu Glu Gln Leu Glu	100	105	110
Lys Ile Ser His Gln Asp His Ser Asp Lys Asn Arg Leu Leu Glu Leu	115	120	125
Glu Thr Arg Leu Arg Glu Val Ser Leu Glu His Glu Glu Gln Lys Leu	130	135	140
Glu Leu Lys Arg Gln Leu Thr Glu Leu Gln Leu Ser Leu Gln Glu Arg	145	150	155
Glu Ser Gln Leu Thr Ala Leu Gln Ala Ala Arg Ala Ala Leu Glu Ser	165	170	175
Gln Leu Arg Gln Ala Lys Thr Glu Leu Glu Glu Thr Thr Ala Glu Ala	180	185	190
Glu Glu Glu Ile Gln Ala Leu Thr Ala His Arg Asp Glu Ile Gln Arg	195	200	205
Lys Phe Asp Ala Leu Arg Asn Ser Cys Thr Val Ile Thr Asp Leu Glu	210	215	220
Glu Gln Leu Asn Gln Leu Thr Glu Asp Asn Ala Glu Leu Asn Asn Gln	225	230	235
Asn Phe Tyr Leu Ser Lys Gln Leu Asp Glu Ala Ser Gly Ala Asn Asp	245	250	255
Glu Ile Val Gln Leu Arg Ser Glu Val Asp His Leu Arg Arg Glu Ile	260	265	270
Thr Glu Arg Glu Met Gln Leu Thr Ser Gln Lys Gln Thr Met Glu Ala	275	280	285
Leu Lys Thr Thr Cys Thr Met Leu Glu Glu Gln Val Met Asp Leu Glu	290	295	300
Ala Leu Asn Asp Glu Leu Leu Glu Lys Glu Arg Gln Trp Glu Ala Trp	305	310	315
Arg Ser Val Leu Gly Asp Glu Lys Ser Gln Phe Glu Cys Arg Val Arg	325	330	335

Glu Leu Gln Arg Met Leu Asp Thr Glu Lys Gln Ser Arg Ala Arg Ala
 340 345 350

Asp Gln Arg Ile Thr Glu Ser Arg Gln Val Val Glu Leu Ala Val Lys
 355 360 365

Glu His Lys Ala Glu Ile Leu Ala Leu Gln Gln Ala Leu Lys Glu Gln
 370 375 380

Lys Leu Lys Ala Glu Ser Leu Ser Asp Lys Leu Asn Asp Leu Glu Lys
 385 390 395 400

Lys His Ala Met Leu Glu Met Asn Ala Arg Ser Leu Gln Gln Lys Leu
 405 410 415

Glu Thr Glu Arg Glu Leu Lys Gln Arg Leu Leu Glu Glu Gln Ala Lys
 420 425 430

Leu Gln Gln Gln Met Asp Leu Gln Lys Asn His Ile Phe Arg Leu Thr
 435 440 445

Gln Gly Leu Gln Glu Ala Leu Asp Arg Ala Asp Leu Leu Lys Thr Glu
 450 455 460

Arg Ser Asp Leu Glu Tyr Gln Leu Glu Asn Ile Gln Val Leu Tyr Ser
 465 470 475 480

His Glu Lys Val Lys Met Glu Gly Thr Ile Ser Gln Gln Thr Lys Leu
 485 490 495

Ile Asp Phe Leu Gln Ala Lys Met Asp Gln Pro Ala Lys Lys Lys Lys
 500 505 510

Val Pro Leu Gln Tyr Asn Glu Leu Lys Leu Ala Leu Glu Lys Glu Lys
 515 520 525

Ala Arg Cys Ala Glu Leu Glu Glu Ala Leu Gln Lys Thr Arg Ile Glu
 530 535 540

Leu Arg Ser Ala Arg Glu Glu Ala Ala His Arg Lys Ala Thr Asp His
 545 550 555 560

Pro His Pro Ser Thr Pro Ala Thr Ala Arg Gln Gln Ile Ala Met Ser
 565 570 575

Ala Ile Val Arg Ser Pro Glu His Gln Pro Ser Ala Met Ser Leu Leu
 580 585 590

Ala Pro Pro Ser Ser Arg Arg Lys Glu Ser Ser Thr Pro Glu Glu Phe
 595 600 605

Ser Arg Arg Leu Lys Glu Arg Met His His Asn Ile Pro His Arg Phe
 610 615 620

Asn Val Gly Leu Asn Met Arg Ala Thr Lys Cys Ala Val Cys Leu Asp
 625 630 635 640

Thr Val His Phe Gly Arg Gln Ala Ser Lys Cys Leu Glu Cys Gln Val
 645 650 655

Met Cys His Pro Lys Cys Ser Thr Cys Leu Pro Ala Thr Cys Gly Leu
 660 665 670

Pro Ala Glu Tyr Ala Thr His Phe Thr Glu Ala Phe Cys Arg Asp Lys
 675 680 685

Met Asn Ser Pro Gly Leu Gln Thr Lys Glu Pro Ser Ser Ser Leu His
 690 695 700

Leu Glu Gly Trp Met Lys Val Pro Arg Asn Asn Lys Arg Gly Gln Gln
 705 710 715 720

Gly Trp Asp Arg Lys Tyr Ile Val Leu Glu Gly Ser Lys Val Leu Ile
 725 730 735

Tyr Asp Asn Glu Ala Arg Glu Ala Gly Gln Arg Pro Val Glu Glu Phe
 740 745 750

Glu Leu Cys Leu Pro Asp Gly Asp Val Ser Ile His Gly Ala Val Gly
 755 760 765

Ala Ser Glu Leu Ala Asn Thr Ala Lys Ala Asp Val Pro Tyr Ile Leu
 770 775 780

Lys Met Glu Ser His Pro His Thr Thr Cys Trp Pro Gly Arg Thr Leu
 785 790 795 800

Tyr Leu Leu Ala Pro Ser Phe Pro Asp Lys Gln Arg Trp Val Thr Ala
 805 810 815

Leu Glu Ser Val Val Ala Gly Gly Arg Val Ser Arg Glu Lys Ala Glu
 820 825 830

Ala Asp Ala Lys Leu Leu Gly Asn Ser Leu Leu Lys Leu Glu Gly Asp
 835 840 845

Asp Arg Leu Asp Met Asn Cys Thr Leu Pro Phe Ser Asp Gln Val Val
 850 855 860

Leu Val Gly Thr Glu Glu Gly Leu Tyr Ala Leu Asn Val Leu Lys Asn
 865 870 875 880

Ser Leu Thr His Val Pro Gly Ile Gly Ala Val Phe Gln Ile Tyr Ile
 885 890 895

Ile Lys Asp Leu Glu Lys Leu Leu Met Ile Ala Gly Glu Glu Arg Ala
 900 905 910

Leu Cys Leu Val Asp Val Lys Lys Val Lys Gln Ser Leu Ala Gln Ser
 915 920 925

His Leu Pro Ala Gln Pro Asp Ile Ser Pro Asn Ile Phe Glu Ala Val
 930 935 940

Lys Gly Cys His Leu Phe Gly Ala Gly Lys Ile Glu Asn Gly Leu Cys
 945 950 955 960

Ile Cys Ala Ala Met Pro Ser Lys Val Val Ile Leu Arg Tyr Asn Glu
 965 970 975

Asn Leu Ser Lys Tyr Cys Ile Arg Lys Glu Ile Glu Thr Ser Glu Pro
 980 985 990

Cys Ser Cys Ile His Phe Thr Asn Tyr Ser Ile Leu Ile Gly Thr Asn
 995 1000 1005

Lys Phe Tyr Glu Ile Asp Met Lys Gln Tyr Thr Leu Glu Glu Phe Leu
 1010 1015 1020

Asp Lys Asn Asp His Ser Leu Ala Pro Ala Val Phe Ala Ala Ser Ser
 1025 1030 1035 1040

Asn Ser Phe Pro Val Ser Ile Val Gln Val Asn Ser Ala Gly Gln Arg
 1045 1050 1055

Glu Glu Tyr Leu Leu Cys Phe His Glu Phe Gly Val Phe Val Asp Ser
 1060 1065 1070

Tyr Gly Arg Arg Ser Arg Thr Asp Asp Leu Lys Trp Ser Arg Leu Pro
 1075 1080 1085

Leu Ala Phe Ala Tyr Arg Glu Pro Tyr Leu Phe Val Thr His Phe Asn
 1090 1095 1100

Ser Leu Glu Val Ile Glu Ile Gln Ala Arg Ser Ser Ala Gly Thr Pro
 1105 1110 1115 1120

Ala Arg Ala Tyr Leu Asp Ile Pro Asn Pro Arg Tyr Leu Gly Pro Ala
 1125 1130 1135

Ile Ser Ser Gly Ala Ile Tyr Leu Ala Ser Ser Tyr Gln Asp Lys Leu
 1140 1145 1150

Arg Val Ile Cys Cys Lys Gly Asn Leu Val Lys Glu Ser Gly Thr Glu
 1155 1160 1165

His His Arg Gly Pro Ser Thr Ser Arg Ser Ser Pro Asn Lys Arg Gly
 1170 1175 1180

Pro Pro Thr Tyr Asn Glu His Ile Thr Lys Arg Val Ala Ser Ser Pro
 1185 1190 1195 1200

Ala Pro Pro Glu Gly Pro Ser His Pro Arg Glu Pro Ser Thr Pro His
 1205 1210 1215

Arg Tyr Arg Glu Gly Arg Thr Glu Leu Arg Arg Asp Lys Ser Pro Gly
 1220 1225 1230

Arg Pro Leu Glu Arg Glu Lys Ser Pro Gly Arg Met Leu Ser Thr Arg
 1235 1240 1245

Arg Glu Arg Ser Pro Gly Arg Leu Phe Glu Asp Ser Ser Arg Gly Arg
 1250 1255 1260

Leu Pro Ala Gly Ala Val Arg Thr Pro Leu Ser Gln Val Asn Lys Val
 1265 1270 1275 1280

Trp Asp Gln Ser Ser Val
 1285

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